Jacobs Civil Inc.
Two Center Plaza
Boston, MA 02108-1906 U.S.A.
617.742.8060 Fax: 617.742.8830

Memorandum

Date November 15, 2007

To Mike Anderson

From Jonathan Taylor

Subject New Bedford Harbor
35BG0108
Compacted Properties of Dredge Materials

As you requested, I have reviewed the available information on the geotechnical properties of the dredge spoil materials in order to estimate their compaction properties.

Filter Cake:

The filter cake is a very soft, wet, black clay, with typically greater than 90% passing the #200 sieve. The environmental testing on this material indicated that it typically has a moisture content between 65 and 75 percent, with a wet density of 90 – 100 pcf.

I expect the compaction properties of this material to exhibit a moisture-density relationship similar to most clays, with characteristics which I estimate as follows:

Optimum Moisture Content	20% - 30%
Maximum Dry Density	85 – 105 pcf

With these properties, the in-place density of the filter cake at 90% compaction would range from 95 to 115 pcf, (1.30 to 1.55 t/cy).

Sand:

The particle size distribution of the sand indicates that typically it contains 15 to 20 percent fines with minor amounts of gravel. The dredged moisture content is typically 20 to 25%. Although predominantly composed of sand sized particles, the percent of silt and clay material is large enough to control the compaction properties, and this material will also exhibit a moisture-density relationship typical of clays. I estimate the following range of compaction properties:

Optimum Moisture Content	10% - 20%
Maximum Dry Density	115 – 130 pcf

With these properties, the in-place density of the sand at 90% compaction would range from 115 to 130 pcf, (1.55 to 1.75 t/cy).

Laboratory Testing:

The compaction properties of these materials can be easily and relatively inexpensively established. Two or three samples of each material in 5 gallon buckets should be sent to a soils lab and the compaction characteristics measured in accordance with ASTM D1557. Each compaction test will probably cost around $150.

Please do not hesitate to contact me if you have any questions.